AMENDMENTS

IN THE CLAIMS:

1. (Canceled)

2. (Currently Amended) An integrated radio-frequency coil array, comprising:

a first coil spanning a first field ~~filed~~ of view (FOV);

a first driving means for driving the first coil to image;

a second coil spanning a second FOV;

a second driving means for driving the second coil to image;

a third coil spanning a third FOV, wherein a combined FOV of the second and third coil is substantially equivalent to the first FOV;

a third driving means for driving the third coil to image, wherein at least two of the first, second and third coils can be driven simultaneously to obtain a combined image and each coil can be driven independently to obtain an image; and

a first common coil path that includes at least one reactive component, wherein the second coil and the third coil share the first common coil path without overlap, and the second coil and the third coil adjoin one another without overlap.

3. (Previously Presented) The coil array of claim 2, wherein the second coil and the third coil are substantially isolated from one another and from the first coil.

4. (Previously Presented) The coil array of claim 2, wherein the first coil has an imaging field of view (FOV), and the second coil and the third coil combine to span a near identical B field to that of the first coil over the imaging FOV.

5. (Previously Presented) The coil array of claim 2, wherein the second coil and the third coil are a subset of the first coil.

6. (Previously Presented) The coil array of claim 2, wherein the second coil and the third coil have substantially the same dimensions.

7. (Canceled)

8. (Canceled)

9. (Previously Presented) The coil array of claim 2, wherein the reactive components are chosen to cancel the coupling between the second coil and the third coil.

10. (Canceled)

11. (Previously Presented) The coil array of claim 2, wherein the second coil and the third coil are situated symmetrically within the first coil.

12. (Previously Presented) The coil array of claim 2, wherein the first coil, the second coil and the third coil image simultaneously, independent of each other.

13. (Previously Presented) The coil array of claim 2, wherein the first coil and a combination of the second coil and the third coil image simultaneously.

14. (Previously Presented) The coil array of claim 2, wherein the second coil and the third coil image simultaneously.

15. (Canceled)

16. (Previously Presented) The coil array of claim 2, wherein the coil array design is selected from the group consisting of a birdcage, a solenoid, an Alderman-Grant resonator, a transverse electromagnetic wave (TEM) resonator, a saddle, a counter rotating coil CRC pair, a Helmholtz pair, a surface loop coil, and a surface coil.

17. (Previously Presented) The coil array of claim 2, wherein the first coil, the second coil and the third coil are configured from the group consisting of a high-pass

configuration, a low-pass configuration, a band-pass configuration and a band-stop configuration.

18. (Previously Presented) The coil array of claim 2, wherein the first coil, the second coil and the third coil are volume type coils.

19. (Previously Presented) The coil array of claim 2, wherein the first coil, the second coil and the third coil are surface type coils.

20. (Previously Presented) The coil array of claim 2, wherein

the first coil is a first long birdcage comprising a first ring interconnected to a second ring,

the second coil is a second short birdcage located relative to the first long birdcage, comprising the first ring interconnected to the central ring, and

the third coil is a third short birdcage located relative to the first long birdcage and the second short birdcage, comprising the central ring interconnected to the third ring.

21. (Previously Presented) The coil array of claim 20, wherein a k=1 linear mode of the second short birdcage and the third short birdcage is tuned and matched to about 50 ohms at the nuclear magnetic resonance (NMR) frequency, and the k=1 linear mode of the first long birdcage is tuned to the NMR frequency.

22. (Previously Presented) The coil array of claim 20, wherein the second short birdcage and the third short birdcage are isolated from the first long birdcage when the second short birdcage and the third short birdcage are driven with currents of equal amplitudes 180 degrees out of phase.

23. (Previously Presented) The coil array of claim 20, wherein the second short birdcage and the third short birdcage have substantially the same dimensions.

24. (Previously Presented) The coil array of claim 23, wherein the second short birdcage and the third short birdcage are about one half the length of the first long birdcage.

25. (Previously Presented) The coil array of claim 20, wherein the central ring is decoupled with respect to the first long birdcage.

26. (Previously Presented) The coil array of claim 20, wherein the first long birdcage, the second short birdcage and the third short birdcage are in a high pass configuration.

27 - 29 (Canceled)

30. (Previously Presented) The coil array of claim 20, wherein the coil array is a volume type coil and a final image produced by the coil array includes a combination of a homogenous mode produced by the first large birdcage and an RF gradient mode produced by the second small birdcage and the third small birdcage.

31. (Canceled)

32. (Previously Presented) The coil array of claim 20, wherein the first long birdcage is driven by a coupling method selected from the group consisting of inductive coupling and capacitive coupling.

33. (Currently Amended) The coil array of claim 32, wherein the first long birdcage is driven by a rectangular loop and the combined second small birdcage and third small birdcage is driven by a figure eight loop.

34. (Previously Presented) The coil array of claim 32, wherein a homogenous mode produced by the first long birdcage and a radio frequency gradient mode produced by the combined second small birdcage and third small birdcage are combined along a coil axis.

35 - 38 (Canceled)

39. (Previously Presented) The coil array of claim 20 wherein an RF gradient mode is generated along a coil axis of a combined second small birdcage and third small birdcage.

40. (Previously Presented) The coil array of claim 39 wherein the RF gradient mode is in quadrature.

41. (Previously Presented) The coil array of claim 39 wherein the RF gradient mode comprises two linear RF gradient modes orthogonal to one another.

42. (Previously Presented) A resonance imaging/analysis system, comprising:

a coil array as described in claim 2; and

a means for processing RF signals which are at least one of received from the coil array and transmitted from the coil array in order to obtain a resonance image/analysis.

43 (Previously Presented) The coil array of claim 2, wherein the second coil and the third coil are situated such that the first common coil path falls over a central virtual ground plane of the first coil.

44. (Previously Presented) The coil array of claim 2, wherein each coil is driven simultaneously to obtain an independent image.

45. (Previously Presented) The coil array of claim 2, wherein each coil is driven individually to obtain an independent image.

46. (Previously Presented) The coil array of claim 2, wherein the first driving means includes a first inductive coupling loop coupled to the first coil, the second driving means

includes a second inductive coupling loop coupled to the second coil, and the third driving means includes a third inductive coupling loop coupled to the third coil, and wherein the second inductive coupling loop and the third inductive coupling loop are overlapped to cancel a net mutual flux between the second inductive coupling loop and the third inductive coupling loop.

47. (Previously Presented) The coil array of claim 2, wherein the first driving means is selected from the group consisting of inductive coupling and capacitive coupling.

48. (Previously Presented) The coil array of claim 47, wherein the second and third coil are driven across the reactive component.

49. (Previously Presented) The coil array of claim 2, wherein the first driving means is a rectangular loop and the second and third driving means are combined into a figure eight loop.